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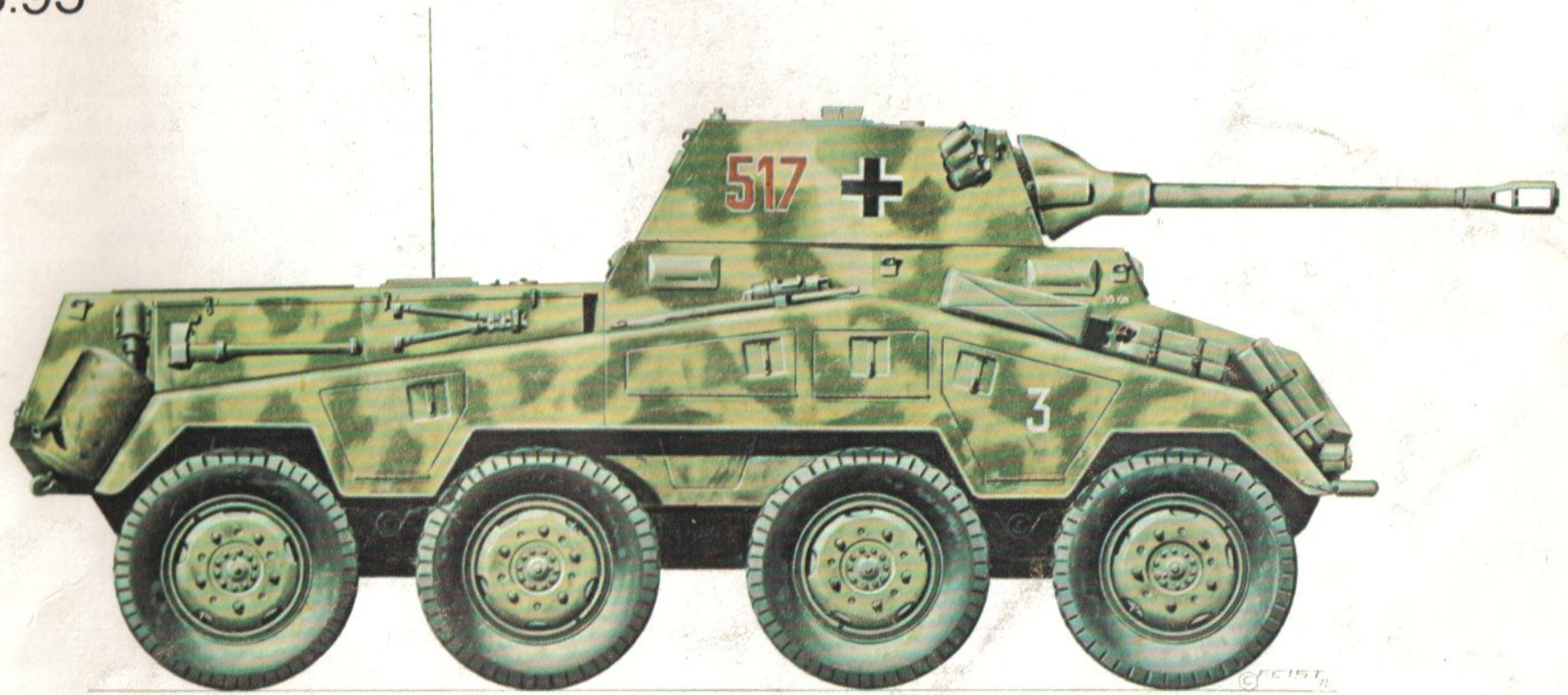

Panzerspähwagen 'Puma' (Sd.Kfz. 234/2) 5 cm KWK 39/1 L/60

Panzerspähwagen in Action

Panzerspähwagen in Action

Created by Uwe Feist

Captions by Mike Dario

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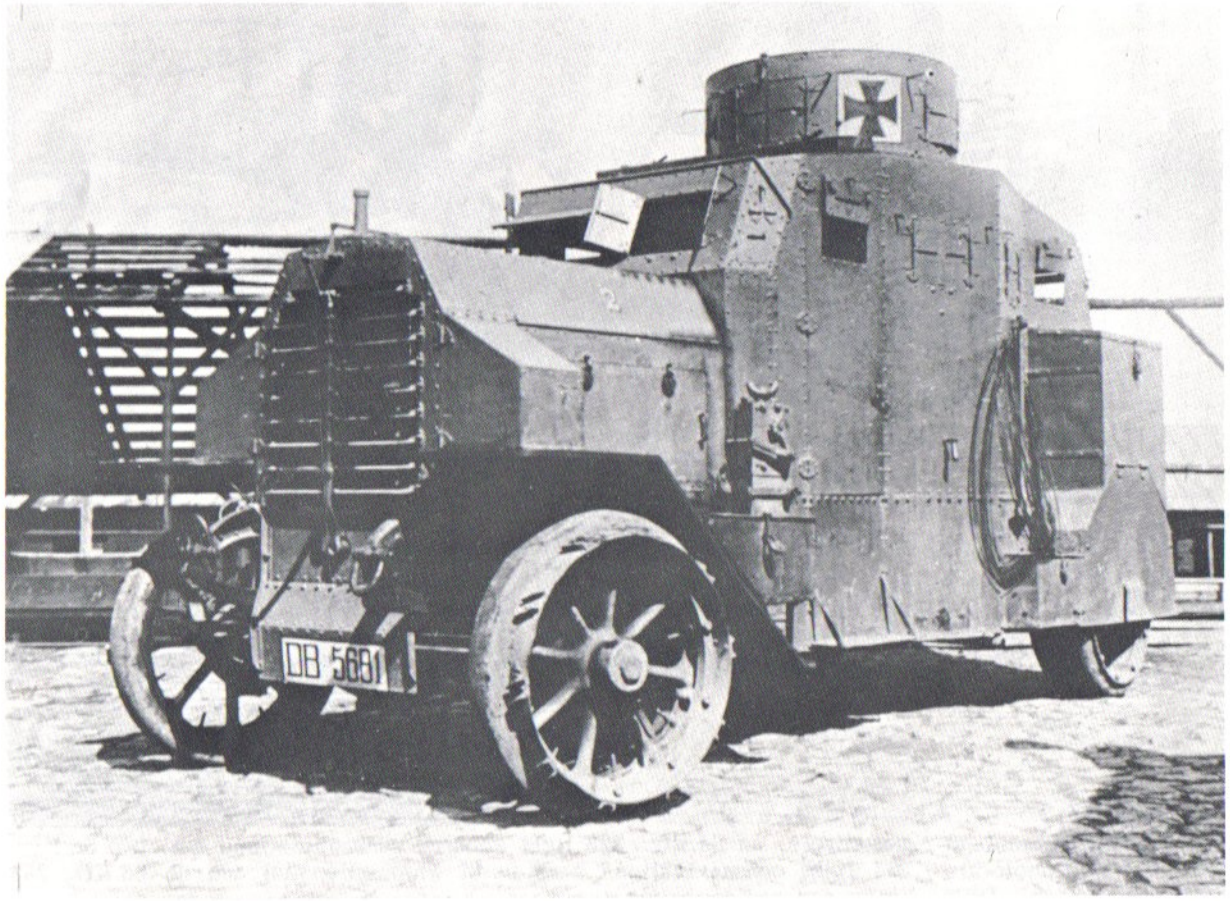
BLITZKRIEG! An armored reconnaisance column of the **Grossdeutschland Division** pauses during the campaign in the East. Visible in this photo are six separate types of vehicles: five **Sd.Kfz. 250 halftracks,** one **DKW motorcycle**, an **Sd.Kfz. 223 light armored communications car,** two **Sd.Kfz. 261 light communications cars** (with whip antennas) and an **Sd.Kfz. 263 heavy armored communications car.**

Development

As well as many other things, the military restrictions imposed upon the German Army by the terms of the **Versailles Treaty** in 1918 included certain limitations on armored vehicles. The treaty allowed the Germans to produce and operate only wheeled armored vehicles for police and military defense use. Tanks, or tracked armored vehicles were expressly forbidden, although caterpillar tractors for agricultural and construction use were not.

Not until 1935, when Hitler openly flaunted the treaty by reestablishing national universal service and presenting to the world a veritable armada of armored vehicles, both wheeled and tracked, was it made clear that the German military was showing any interest at all in the use of armor as a combat arm.



One of Germany's first armored cars; the **Ehrhardt** model 1917, which was powered by an 85 hp **Ehrhardt** engine with four-wheel drive and fore-and-aft steering. This large vehicle had a crew of nine men—the members complained that the vehicle was too cramped.

A **Krupp-Daimler armored car** participating in the **Reichswehr** autumn maneuvers of 1930 in East Prussia. Although the vehicle is armed with only one machine gun, there were no less than fifteen separate firing ports around the vehicle through which the machine gun could be fired.

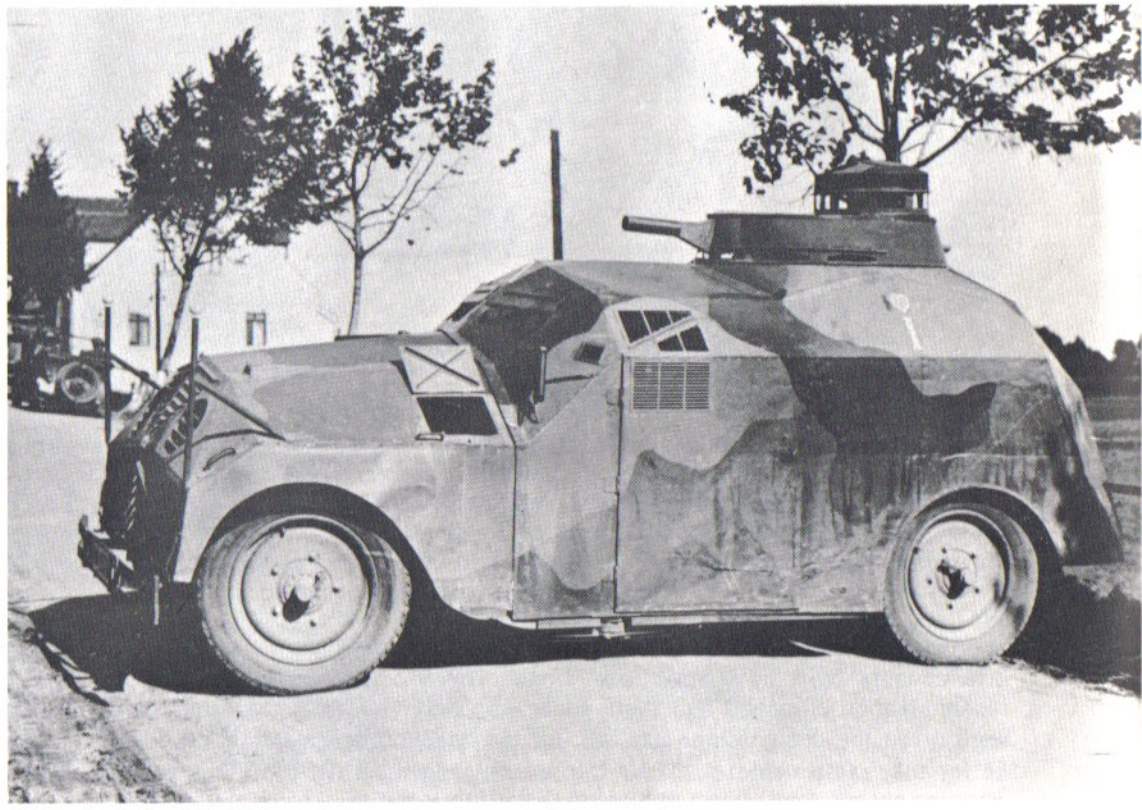
During the closing stages of the First World War Germany produced her first **Strassenpanzer** (lit. street tank) and that's exactly what it was—a street tank. They were huge vehicles built on reinforced truck chassis and were twelve feet high! Made almost entirely of boiler plate armor riveted together, they weighed so much that their engines could power them at speeds of only five and six miles per hour maximum. These early **Strassenpanzer** remained in use until the late 1920's.

The next vehicles to be armored were small twin-axle commercial automobile chassis built by German auto firms. These cars were to be used for reconnaisance purposes and their armor was only light metal plating. They were given the designations **Kfz. 13**, for the **'machine gun vehicle'**, and **Kfz. 14** for the **'radio vehicle'**. Their thin armor gave them little protection from anything except small bomb and grenade splinters, but they were nevertheless used for the training of armored car units up until the outbreak of the Polish campaign in 1939. Some of them were even used in the latter stages of the Polish campaign, where it became apparent that they were of no use except for training.

Concurrent with the development of the twin-axle cars, the German Army was working on a standard 6 x 4 truck chassis to carry armor. This type of vehicle used the **Daimler-Benz G3** chassis and was somewhat more heavily armed than the **Kfz. 13**. The one major drawback to this vehicle and its later successors was the 65 hp engine which had to pull over 5 tons of vehicle and armor. Compare that with the modern **Volkswagen** 'Beetle' and its 68 hp engine!

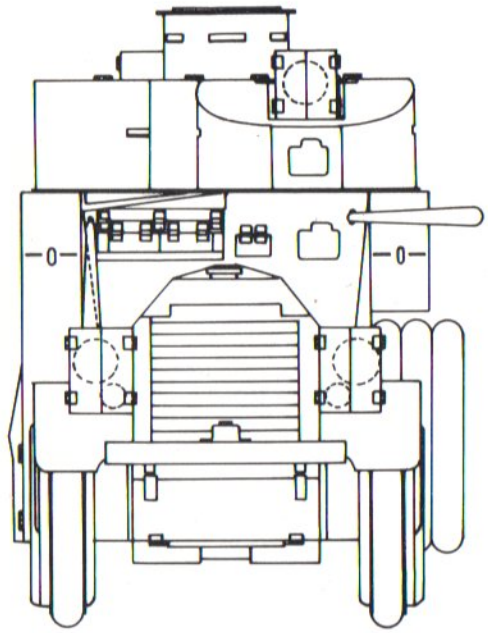
Regardless of these limitations, the early armored cars gave the German Army the tools with which to begin rather serious training for a war in which armored reconnaisance vehicles played a very important part.

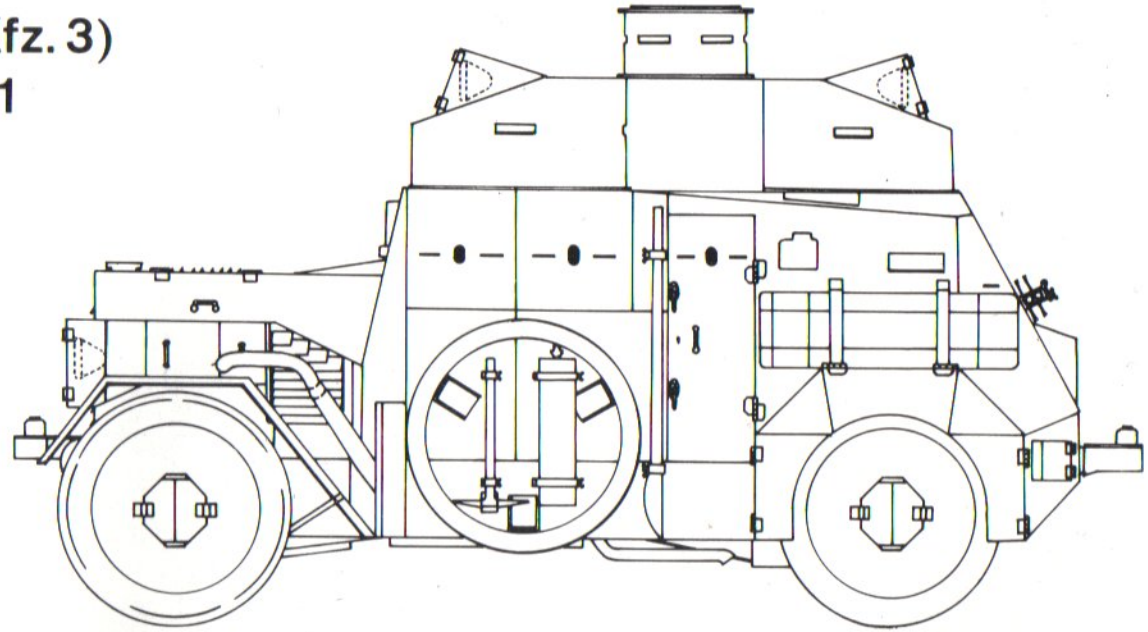
Another view of the big **Krupp-Daimler armored car**, designated by the **Reichswehr** as **Sd.Kfz. 3.** This shot provides a good view of the searchlight and the headlights in their armored boxes. The extensions, or grousers, on either side of the solid rubber tires gave the heavy vehicle a bit more buoyancy when moving over soft or muddy terrain.



Appearances can be deceiving! This armored car is really only a mock-up built from sheetmetal on the chassis of an **Adler** car. These vehicles were used throughout the 1930's during both **Reichswehr** and **Wehrmacht** maneuvers. Through their use, Germany was able to convince many into thinking that they had no armored vehicles and were only conducting 'defensive' maneuvers.

Gepanzerter Kraftwagen (Sd.Kfz. 3)
Schupo-Sonderwagen 1921





How the times have changed. An example of the West German **Bundeswehr's** newest armored car. This 8-wheeled vehicle features 8 x 8 drive, all wheel steering and independent coil suspension for each of its eight wheels.

West Germany's 8-wheeled armored car on trials. The vehicle is built by **Daimler-Benz** and is powered by a V-12 300 horsepower engine. She is armed with a single **Hispano-Mauser** 20mm cannon in the turret and an MG 1 (ex MG 42) can be mounted on the turret top for anti-aircraft defense.

Leichter Panzerspähwagen

The **Wehrmacht's** twin-axle armored cars that participated in the many campaigns of the Second World War were all based on the same common chassis, developed in 1937. The engines were rear mounted V-8's designed by **Horch (Auto Union)** and produced about 80 horsepower. The types to be produced were:

Sd.Kfz. 221 Light armored car with machine gun.
Sd.Kfz. 221 Light armored car with 2.8 cm Panzerbüchse 41.
Sd.Kfz. 222 Light armored car with 2 cm KwK.
Sd.Kfz. 223 Light armored car (communications).
Sd.Kfz. 260 Small armored communications car—unarmed
Sd.Kfz. 261 Small armored communications car—armed

Production of these vehicles started in 1936 and did not cease until 1942, although many of the vehicles remained in combat until the end of the War. Although they were underpowered and their wheels did not give them exceptional cross-country mobility, they did provide steady and reliable service to those who operated them and the lessons learned in both development and operations enabled the **Wehrmacht** to develop a much better vehicle in the four-axle versions that followed shortly after production began on the twin-axled versions.

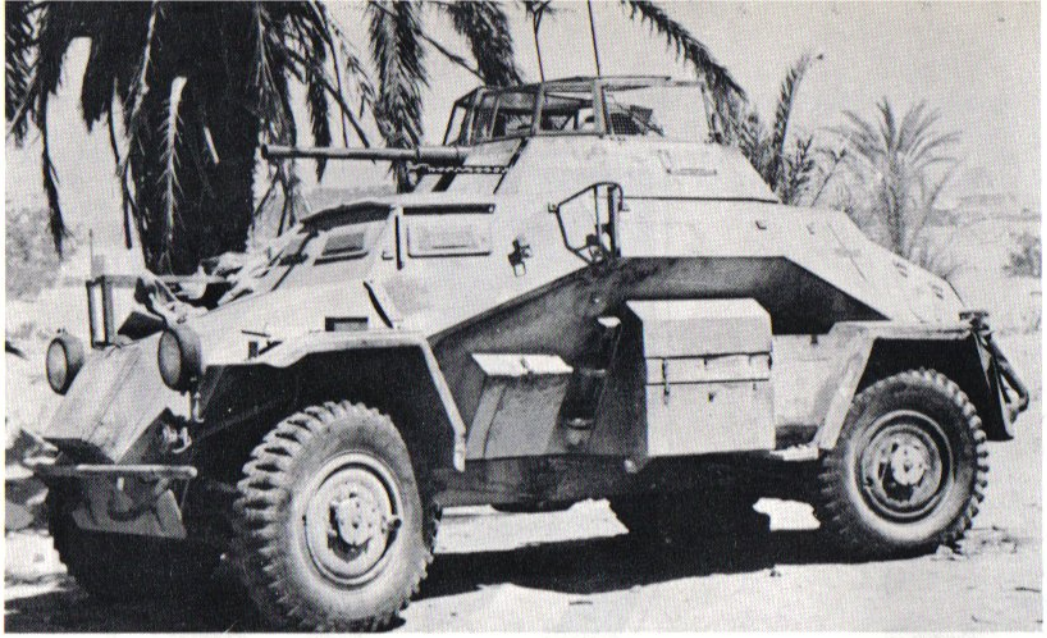
The predecessor of WWII German twin-axle armored cars, the **Kfz. 13,** 'machine gun carrier'. The vehicles shown in this photograph are being used during the autumn maneuvers (2-7 September, 1935) of the VI Army Corps in the Lüneburger Heide training area in what is now the North-area of Western Germany. This area is still a well established military training area, being used jointly by the West German **Bundeswehr** and the British Army of the Rhine (BAOR).

(Right) A column of armored cars bearing the white 'G' of **General Guderian's** armored corps passes through an abandoned village. The car in the foreground is an **Sd.Kfz. 221**, identified by the single upraised armored visor for the driver. The armored car to the right is one of the three-axled armored cars, an **Sd.Kfz. 232** (6 Rad) heavy armored communications vehicle with a 2cm gun.

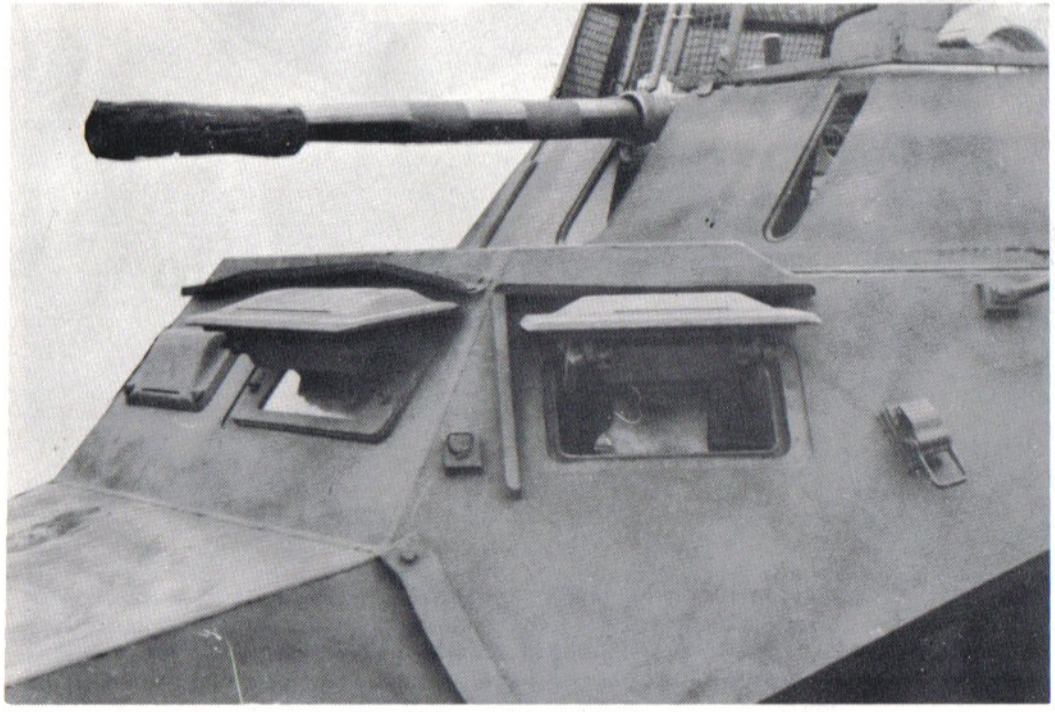
As a column of infantry marches by, this **Sd.Kfz. 221** armored car provides automatic weapon coverage with its MG34. The **Sd.Kfz. 221** was the first armored car to be developed on the standard medium car chassis of 1937. Note the sloping rear deck of the car, showing the rectangular engine access plate. This is one of the most important distinguishing features between the **Sd.Kfz. 221** and the later **222** and **223** models.

SS Panzer-Division 'WIKING'

This exciting photo shows an **Sd.Kfz. 221 armored car** of a reconnaissance company of the **5th SS Motorized Division** (later the **5th SS Panzer Division**) **'Wiking'** rushing into a town in the Balkans in order to reduce a strongpoint of enemy resistance during the summer of 1941.



A nice view of an **Sd.Kfz. 222 armored car** parked next to an oasis during the North African campaign of 1940-1942. The major distinguishing characteristic of this vehicle is its 2cm rapid firing gun and the MG34 machine gun adjacent to it. The vehicle can be further distinguished from the earlier **Sd.Kfz. 221** by the obvious 'step' on the rear decking.



A close-up of the driver's compartment and main armament of the **Sd.Kfz. 222.** Although the driver's view was somewhat restricted, it was adequate to allow the driver to get the vehicle up to speeds of 25 or 30 mph without hitting anything on either side of the roadway. When the armored visors were down for protection, normal speeds were reduced to between 3 and 5 mph, as the view was extremely restricted.

With its main armament raised for anti-aircraft defense, this **Sd.Kfz. 222 armored car** patrols the streets of a Belgian town adjacent to one of Belgium's larger canals, during the 1940 lowlands campaign.

A column of **Sd.Kfz. 222's** moves into an assembly area on the Southern Front in Russia, 1941. The front vehicle is camouflaged with the standard grey base paint and a tan over-painting to break up its image. The large flag on the front of the vehicle served as a recognition marker to low flying German aircraft and was most normally displayed on the hood of the vehicle.

Perimeter watch from the turret of an **Sd.Kfz. 222**, January, 1943. Of interest is the MG42 machine gun, instead of its sister, the MG34. The upraised screens on the turret protected the vehicle and crew from grenades or mines thrown into the open turret.

Here, a trio of **Sd.Kfz. 222's** rolls out of a small Russian village on a reconnaisance patrol. Notable by its absence is the extraordinary amount of on-vehicle equipment, such as jerry cans, tents, ropes, cables, etc., carried by most armored cars.

Here, the crew of an **Sd.Kfz. 222** is in the process of removing the breech and visible on the tarpaulin on the ground at the left of the photo is the barrel recoil mechanism of their 20 mm main armament, in order to clean it.

The overcoats on these two **Afrika Korps** soldiers attest to the changing temperatures of the African desert, which ranged from 40 degrees Fahrenheit at night and early morning to 120 degrees in the afternoon. The **Sd.Kfz. 222 armored car** in the photo is equipped with a desert air filter which can be seen as a cylinder with the hose attached to the rear deck side of the vehicle.

Africa, 1941. A unique photo showing all three main types of twin-axle armored cars used by the **Wehrmacht**. The first vehicle is the 2 cm armed **Sd.Kfz. 222**, followed by the earlier **Sd.Kfz. 221** with its single machine gun and the large single driving window open, and third in line, the **Sd.Kfz. 223 radio vehicle** with its large rectangular frame antenna extended for reception.

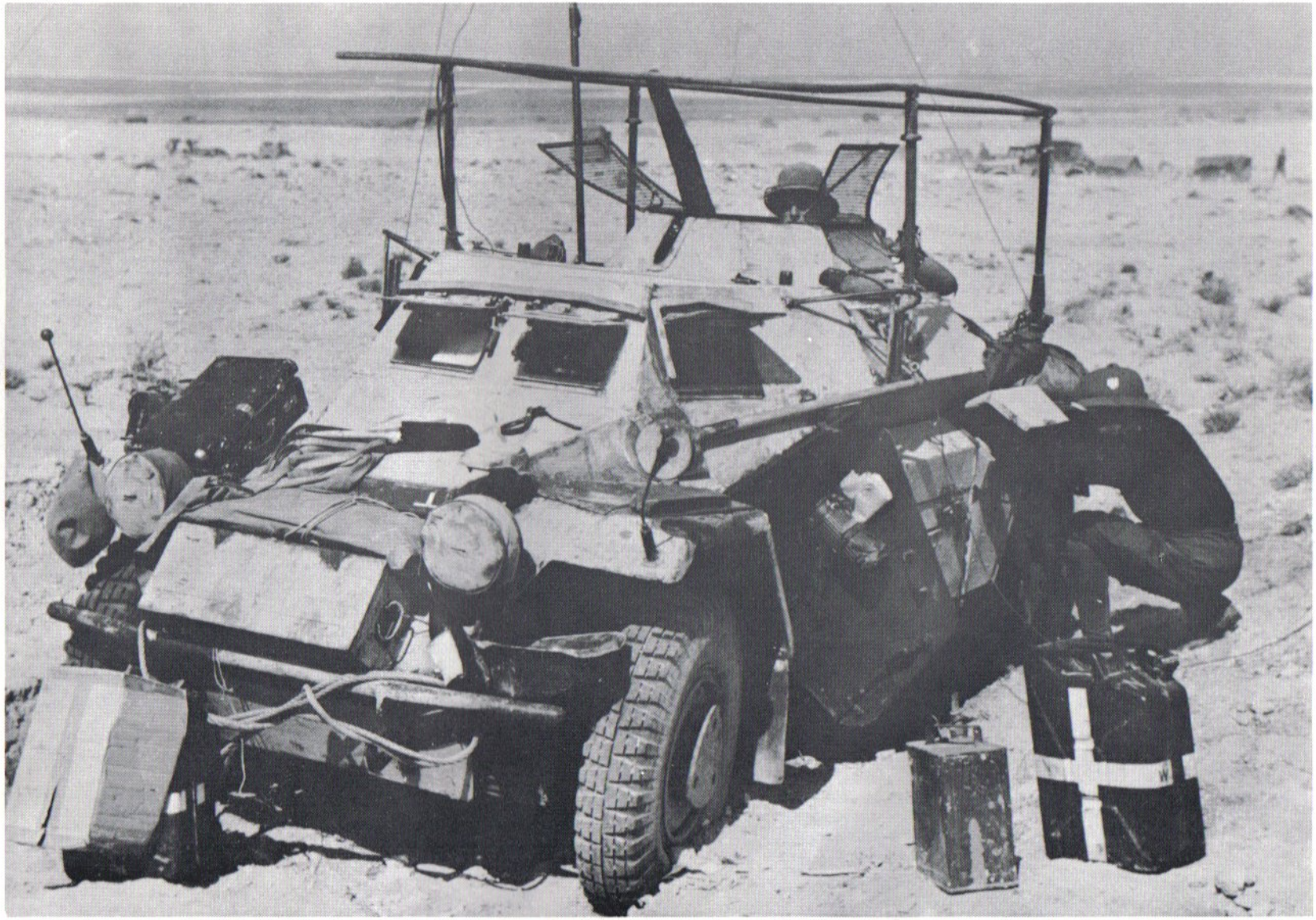
With both the 20mm and the MG 34 out of the vehicle, the three crew members go about wiping them clean of desert sand and cordite residue. Note the six smoke candles attached to the front armor plate of their vehicle in the background.

After the armored car's armament has been thoroughly cleaned, two of the crew members begin to prepare the 20mm ammunition magazines which held 10 to 12 20mm projectiles each. Stowage space for 20 magazines was provided in each of these vehicles

(Left) An **Sd.Kfz. 223 radio vehicle** with its frame antenna raised rounds a corner in a Greek village as the vehicle commander in the open turret issues directions to his driver. These vehicles had a three-man crew, as did the **Sd.Kfz. 222 armored car.**

(Below left) On the border to Luxembourg, May, 1940. A column of motorcycle reconnaisance troops crosses the border into Luxembourg, accompanied by an **Sd.Kfz. 223 communications car** as high ranking **Wehrmacht** officers watch on the left of the photograph.

(Below) This **Sd.Kfz. 223 radio vehicle** fords a stream next to a destroyed bridge during the French campaign of 1940. The large frame antenna has been folded down to provide the vehicle's gunner with a clear field of fire if the necessity arises. The vehicle also carried a long whip antenna which was stowed on the side of the vehicle and could be erected whenever desired. It was used for transmission, while the frame antenna was used to receive signals.



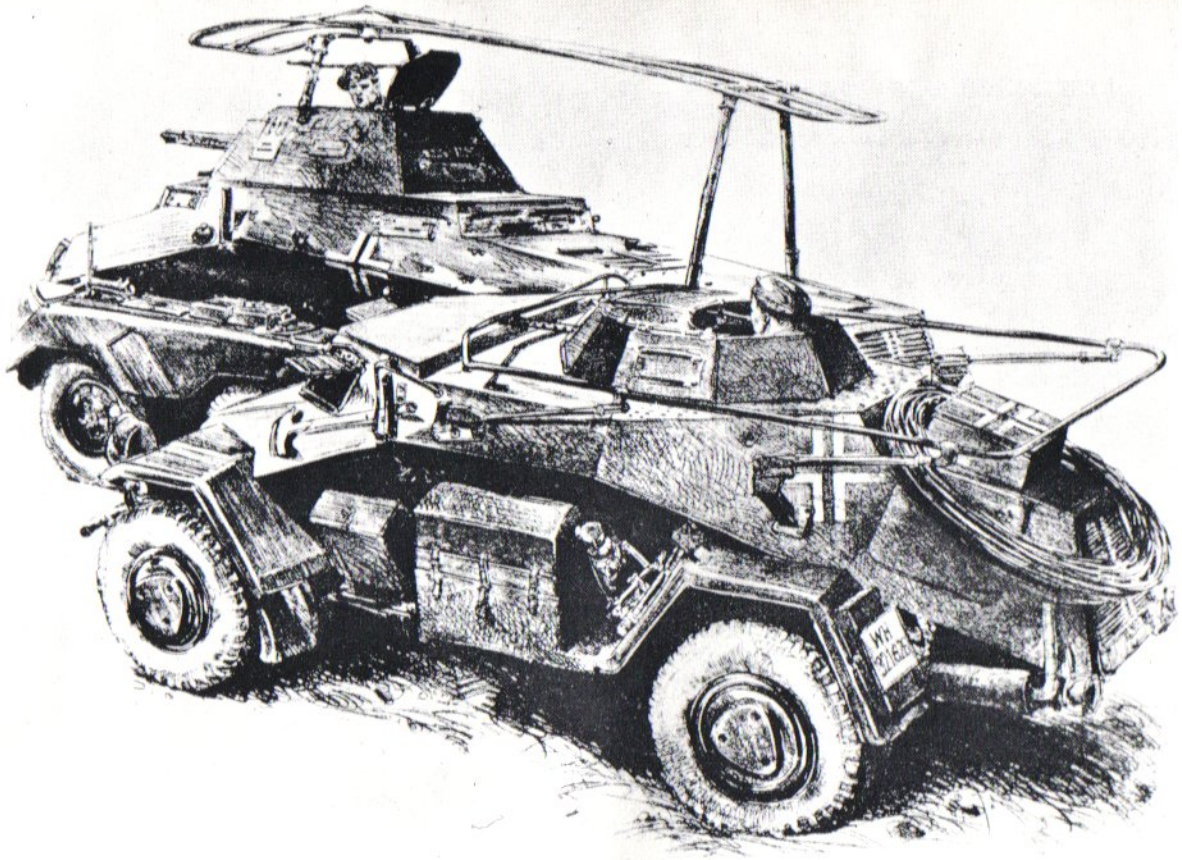
A headquarters communication vehicle of a reconnaisance troop of the 90th Light Division in the process of transmitting. The car is loaded with all sorts of equipment, including two jerricans for water (marked with white crosses) and a crewmember's suitcase.

On the move! An **Sd.Kfz. 223** loaded up for combat moves across the desert wasteland with both the whip antenna and the frame antenna upright. These little vehicles with their four-wheel drive and four-wheel steering were extremely maneuverable, but highly complicated and hard to maintain.

The commander of this **Sd.Kfz. 223** surveys the desert with binoculars, looking for a landmark from which to report his car's position to his reconnaisance batallion's headquarters.

This damaged South African Marmon Herrington Mk II armored car receives a good inspection from **Afrika Korps** soldiers in order to determine whether any part of it can be salvaged for use by the **Wehrmacht.**

All set for a long range reconnaisance patrol, this **Sd.Kfz. 223** features all of the crew's personal gear strapped to the rear decking and at least twenty gallons of spare gasoline in the jerricans on the special rack attached to the front of the vehicle.



(Above) A German combat artist's sketch of an **Sd.Kfz. 223** overtaking a four-axled **Sd.Kfz. 232 armored communications car.** This drawing is one of the many fine efforts of German war artists that were supressed by the victors after World War II.

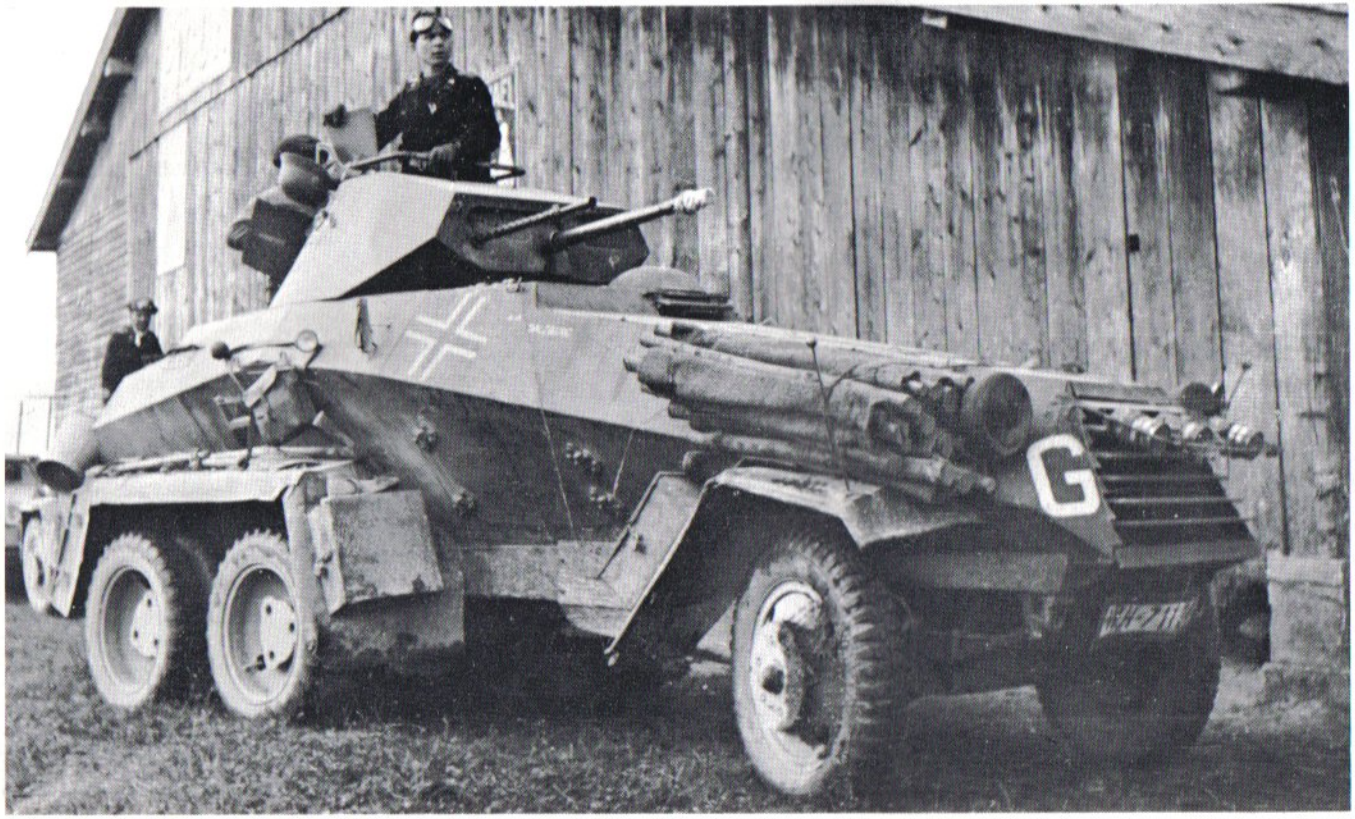
(Below) A scene from Russia, 1943. Escorting prisoners to the rear, this **Sd.Kfz. 261 radio car** sports an MG 42 as its protective armament. This vehicle is from the signals regiment of the **24th Panzer Division.** The **Sd.Kfz. 260** and **261** differed from the **Sd.Kfz. 223** in that they had no turrets, while the **223** did.

Schwerer Panzerspähwagen (Sd.Kfz. 231)

In 1933 the first new three-axle armored cars were issued to the **Reichswehr**. These vehicles were based on the standard **Daimler-Benz G-3a** truck chassis and featured a major modification in fore-and-aft steering. Only the front wheels could be steered, but steering wheels were provided in both the front and the rear of the fighting compartment so that the vehicle could extricate itself from sticky situations without having the driver 'back up'. It would have been impossible for a single driver to back the vehicle up in a combat situation because of very poor rear visibility. Only the rear steering wheel and a series of reverse gears allowed the driver to perform the backing function. This feature was so well liked by the Ordnance Office, that it was installed on the later four-axled vehicles, too.

The majority of the three-axle armored cars were issued to reconnaisance elements of the German Army where they served as the backbone of Germany's armored reconnaisance corps until their eventual phase-out by four-axle armored cars during late 1939 and 1940. Three types of three-axle armored cars were built:

Sd.Kfz. 231 (6 Rad) Heavy armored car with 2cm KwK
Sd.Kfz. 232 (6 Rad) Heavy armored communications car with 2cm KwK
Sd.Kfz. 263 (6 Rad) Armored communications car



Here is an **Sd.Kfz. 231 heavy armored car** mounting a **20mm KwK 30** rapid-firing cannon and a coaxial **MG 17 machine gun** in the turret. This particular vehicle is part of the equipment of a reconnaisance unit of one of **General Guderian's** armored units as the white 'G' on the bow plate indicates. The vehicle is also equipped with three smoke candles on the armored radiator plates.

In this photo, one can see just what kind of cross-country capability these three-axled armored cars possessed, weighing over five tons and powered by a 68 horsepower engine. The vehicle is stuck fast in the ditch beside the road, but cannot extricate itself under its own power.

Help has arrived in the form of an 8-wheeled armored car, an **Sd.Kfz. 232.** The three-axled **Sd.Kfz. 231** here in the photo appears to have sustained either a front suspension failure or a broken left axle as is indicated by the position of the left front wheel in the foreground of the photo.

This is a rare photo indeed, in that all three types of the three-axled armored cars are shown together. The front vehicle is the **Sd.Kfz. 232 heavy armored communications car**, followed by the **Sd.Kfz. 231** heavy armored car. The third vehicle in the line is the **Sd.Kfz. 263 armored communications car.** The only difference between the first and third vehicles was the rigid turret on the third car (Sd.Kfz. 263) which could not be rotated. Barely visible behind the **Sd.Kfz. 263** is a **Kfz. 13** machine-gun carrier, one of Germany's early armored cars.

Schwerer Panzerspähwagen (8 Rad) (Sd.Kfz. 231)

In 1936, only a few years after the use of the three-axled armored cars began in the **Wehrmacht**, the Army's Ordnance Office decided to go through with the production of 8-wheeled types. Development of both four- and five-axled armored cars had started earlier and many good lessons had been learned. These four-axled versions did not actually reach the troops until late 1938, when they began to replace the three-axled types then in use, but it took until 1941 to fully replace all of the three-axled vehicles.

The four-axled armored cars were all built on the same chassis, which was developed by **Büssing-NAG** and was designated the GS chassis. It featured 8 x 8 drive and 8-wheel steering. The front and rear driving stations with their steering wheels were retained and a 180 hp engine drove the 8-ton vehicles at speeds upwards of 50 kilometers per hour on good surfaces.

These vehicle types were to become the standard heavy equipment of the **Wehrmacht** and **Waffen-SS** reconnaisance units from 1940 onwards, and the **Waffen-SS** took them into battle as early as the Polish Campaign in 1939. The following versions were produced:

Sd.Kfz. 231 (8-wheel) Heavy Armored Car with 2 cm KwK.
Sd.Kfz. 232 (8-wheel) Heavy Armored Car (Communications) with 2 cm KwK.
Sd.Kfz. 263 (8-wheel) Heavy Communications Car
Sd.Kfz. 233 (8-wheel) Heavy Armored Car with 7.5 cm KwK.

In 1940, development began on a more sophisticated version of the 8-wheeled armored car using the **Büssing-NAG GS** chassis as a base. Final variants featured a more powerful 12 cylinder engine that produced over 200 horsepower and featured built-in dust filters for tropical use. These vehicles first reached troop use in 1942 but did not begin to replace earlier versions until 1944. These vehicles ranked among the most advanced wheeled armored vehicles developed during the war and heavily influenced the design of most wheeled armored vehicles to be produced by any country since the end of the Second World War. These variants included:

Sd.Kfz. 234/1 Heavy Armored Car with 2 cm KwK.
Sd.Kfz. 234/2 Heavy Armored Car with 5 cm KwK.
Sd.Kfz. 234/3 Heavy Armored Car with 7.5 cm KwK (short)
Sd.Kfz. 234/4 Heavy Armored Car with 7.5 cm KwK (long)

A heavy armored car on the move. These 8-wheeled vehicles had the best cross-country mobility of any of the **Wehrmacht's** wheeled vehicles, despite their weight of near nine tons. The vehicle's biggest disadvantage was its extremely high silhouette.

An excellent photograph of a brand-new **Sd.Kfz. 231 heavy armored car ('Waffenwagen')** just wheeled out of the **Deutsche Werke** factory in Kiel. Armament for this vehicle and other equipment was not installed until the vehicles were inspected and accepted by a **Wehrmacht** or **Waffen-SS** Ordnance Reception Unit.

A rear view of the factory-fresh **Sd.Kfz. 231**, showing to advantage the alternate set of headlamps just below the license plate holders (still blank) and the rear driver's vision slits just above the air intake grille on the rear top decking.

A **Wehrmacht** armored car crew gets ready to man their **Sd.Kfz. 231 'Waffenwagen'** during the French campaign of 1940. The crew members are wearing the standard black uniform of the Panzer corps. Note the open visors on the front and sides of the driving compartment.

Afrika Korps personnel gather around the engine access hatch of this 8-wheeler to look for any visible signs of damage. Regardless of the precautions taken by **Afrika Korps** personnel to protect their vehicles from sand, the desert played no favorites.

The result of an ambush. Although this heavy armored car was not hit by enemy fire, the reconnaisance column became confused when the enemy opened fire, and this car was pushed into the ditch beside the road when another vehicle collided with it (note the crushed front fender). The crew abandoned the vehicle because the damage prevented the vehicle from being steered.

(Above) A good close view of a late model **Sd.Kfz. 231** carrying a section of **Panzergrenadiers** toward an assembly area before a German counter offensive on the Eastern Front. The vehicle in the background is an **Sd.Kfz. 233 8-wheeled armored car** armed with a short barreled 75mm gun, used for close support.

This armored car, abandoned by the Germans because of breakdown or lack of fuel, has been captured by the British and is shown tied to a trailer for shipment back to England and eventual evaluation.

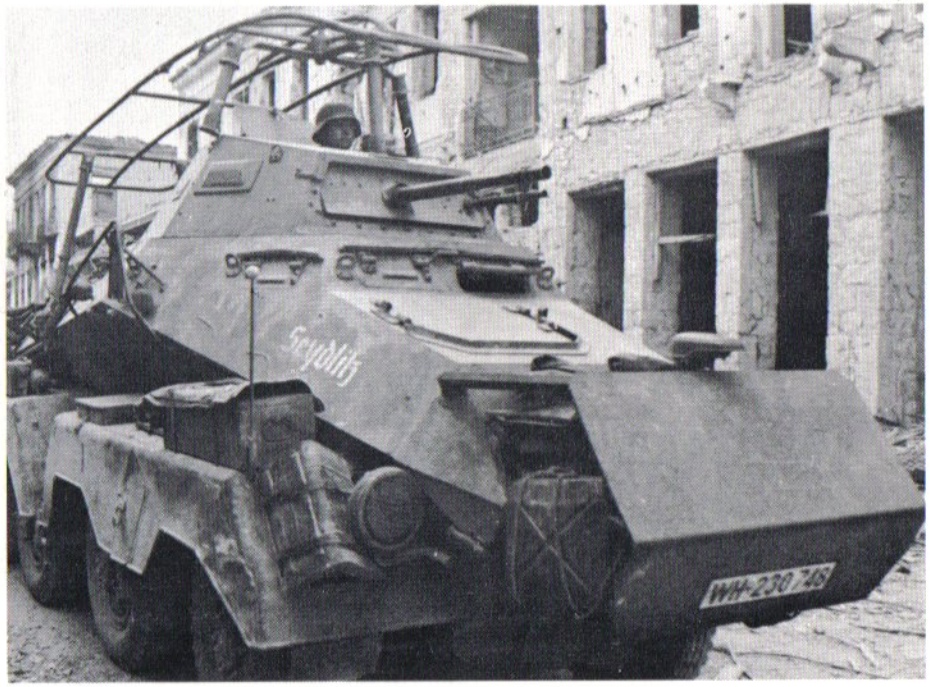
(Left) Passing a burnt-out **Italian Semovente 75mm self-propelled gun** on the left and an American-built **Jeep** on the right, this late model **'Waffenwagen'** escorts an early model **PzKpfw VI 'Tiger'** tank toward the front lines in Tunisia, early 1943.

At the **Deutsche Werke** factory in Kiel, a brand-new **Sd.Kfz. 232** waits adjacent to the factory's railroad spur until a train can pick it up for delivery to a **Wehrmacht** inspection unit. During peak production of these vehicles, the **Deutsche Werke** factory could turn out up to twenty of these vehicles a day. More could have been produced, but no third, or 'graveyard' shift was worked.

The **Sd.Kfz. 232** here differed only from its brother, the **Sd.Kfz. 231** by the inclusion of the built-on frame antenna and additional radio equipment. The rods on the fenders with the small white balls at their tops signified the widest part of the vehicle. They enabled the driver to judge distance between obstacles and determine if the vehicle could fit between them.

(Above) The commander of this **Sd.Kfz. 232** belonging to a reconnaisance unit of the **'Grossdeutschland'** Division issues sighting instructions to his gunner inside the turret of the vehicle. The large antenna was quite an impediment in many cases.

Having negotiated his way through the antenna, the commander uses his binoculars to help range the 2cm gun as it fires. Dust can be seen at the left of the photograph where the 2cm rounds are striking.



(Right) An **Sd.Kfz. 232** slowly patrols a littered street for signs of the enemy. The large armored plate on the front of the vehicle protected the car from hits to the frontal armor where, although sloped, it was somewhat weak.

An armored car crew wearing black Panzer uniforms takes delivery of an **Sd.Kfz. 232** at a railroad switch yard somewhere in the Soviet Union The canvas cover on the vehicle's turret was put in place only when the armored car was being shipped or stored.

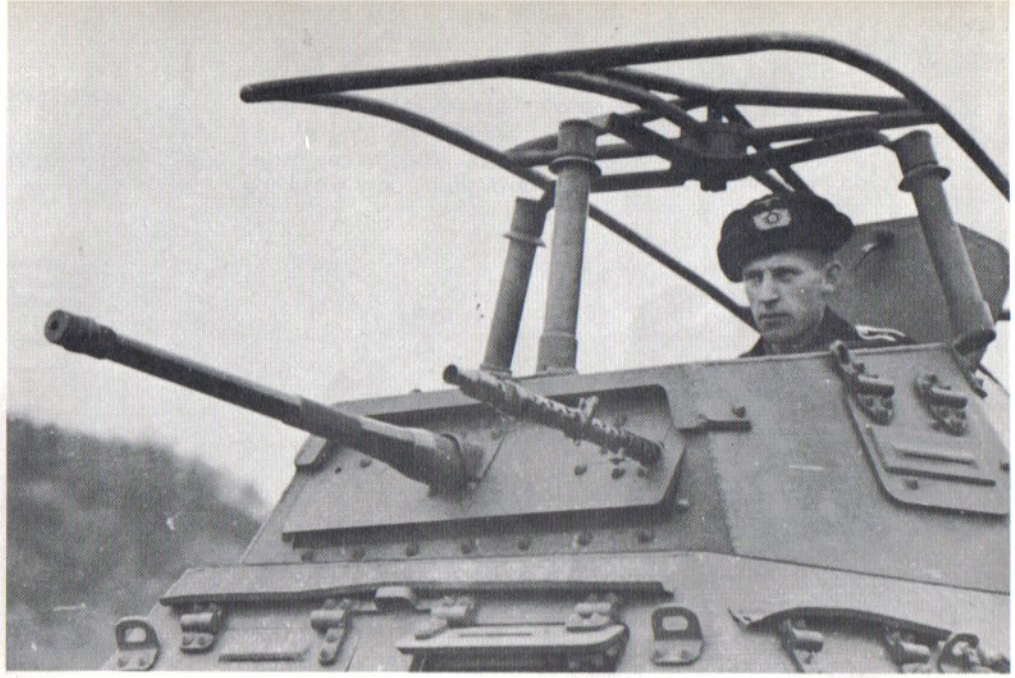
Leading a reconnaisance patrol, this heavy armored communications car features the additional frontal armor plating and a rather worn-looking desert camouflage paint job. Both the 2 cm gun and the coaxial machine gun are covered with canvas to prevent sand from fouling the weapons.

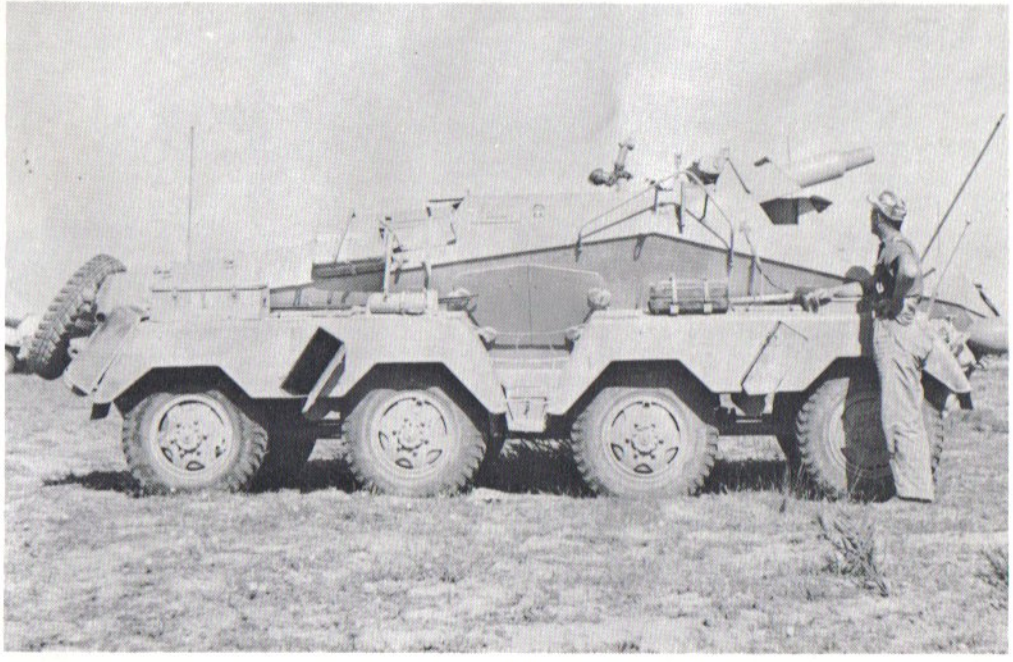
The crew members of this heavy armored car prepare 20mm ammunition and magazines for the vehicle's main armament. This vehicle is a new one as can be seen by the very clean paint job, and the bushes and trees seem to provide adequate concealment for this supply point in the rear.

(Above) Consulting a terrain map, the commander of this heavy armored communications car chooses the best area for his defensive position. Once the location for his vehicle has been chosen, the crew will put the shovel and sandbags in the foreground to good use.

A nice view of the turret and armament of an **Sd.Kfz. 232** heavy armored communications car. Note how the forward part of the large frame antenna was supported by the three uprights which connected together in the middle so that the turret could rotate without harming the antenna.

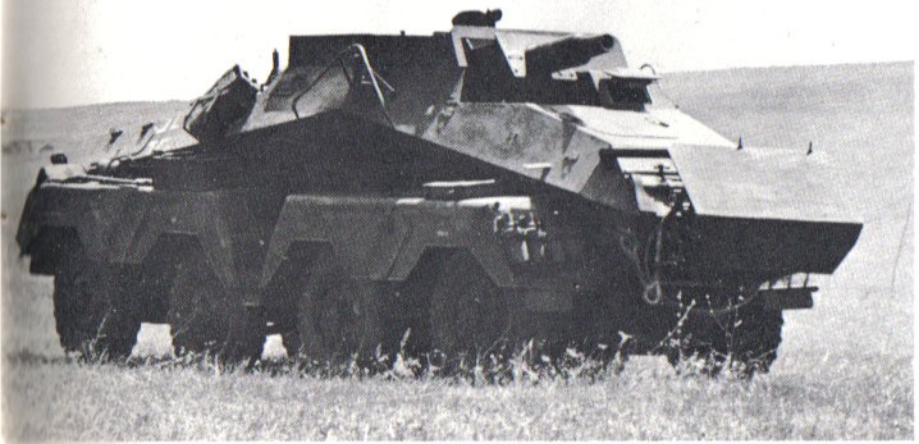
(Right) This **Wehrmacht** soldier studies the superstructure of the turretless **Sd.Kfz. 233** heavy armored car which mounted the **7.5 cm KwK L/24**, the gun used as the main armament on the early versions of the **PzKpfw IV tank**.





(Left) On the defensive. This **Sd.Kfz. 233 heavy armored car** backs down into a dugout position to prepare for a defensive stand. Although the headlamps are still in place on the fenders of the vehicle, they are only shells; the insides having been either removed or damaged and not repaired.

An **Sd.Kfz. 233 heavy armored car** rolls slowly over the Russian steppe, its silhouette standing out starkly against the characterless horizon. The additional armored 'cowcatcher' on the front of the vehicle was seen more frequently on the **Sd.Kfz. 231** and **232 armored cars.**



Sd.Kfz. 233's of a heavy armored car company arriving at the waterfront streets of the **Grecian** port of **Pyraeus** after having disembarked from a cargo ship. The vehicle commanders are wearing the rush green uniform that was adopted later in the war by armored car crews.

A **heavy communications vehicle, Sd.Kfz. 263.** Although built along the same lines as its brothers, the **Sd.Kfz. 231** and **232**, this vehicle had no turret. The superstructure was simply raised in order to accommodate the additional radio equipment necessary for command communications functions.

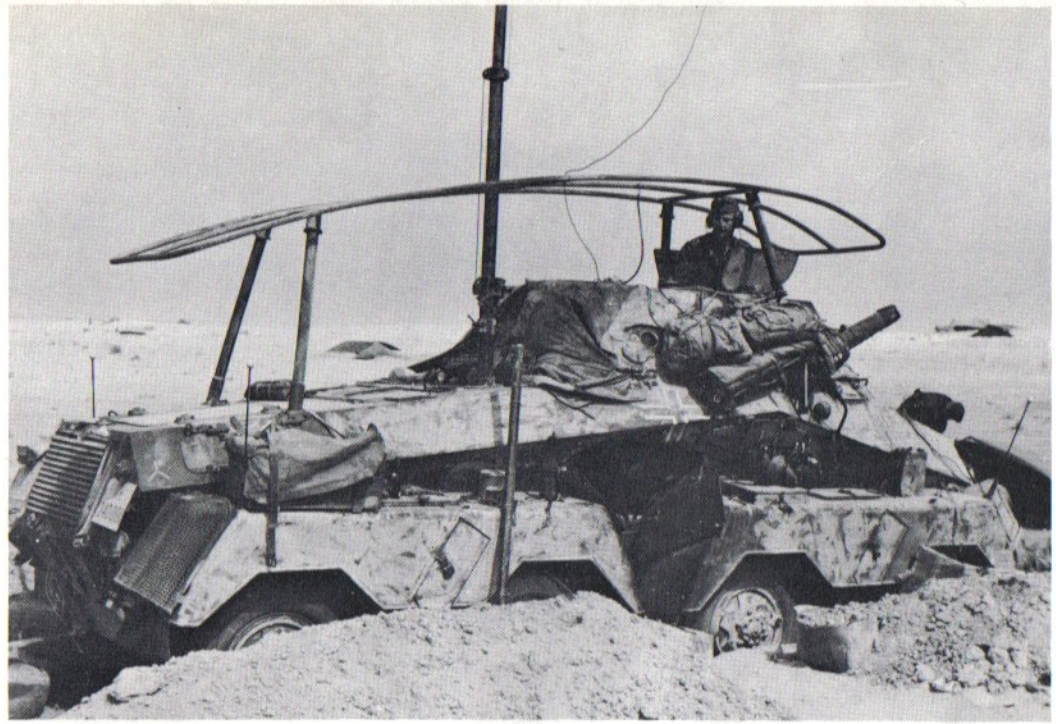
A very nice three-quarter rear view of the newly constructed **Sd.Kfz. 263.** A close look will reveal round pistol ports on the sides of the superstructure, two air horns; one facing forward and the other aft. This particular vehicle has been camouflaged with a two-toned sand yellow and light brown shadow scheme.

(Above) Forward elements on the move. Accompanied by a medium car and a motorcycle with a sidecar, this **Sd.Kfz. 263** acts as the communications link between the commander of this long range patrol and the regimental headquarters further in the rear.

(Above left) Here, a **Wehrmacht** regimental commander in his armored command vehicle reads the text of a message received by the armored communication car on the right during the fighting in the African desert in 1942.

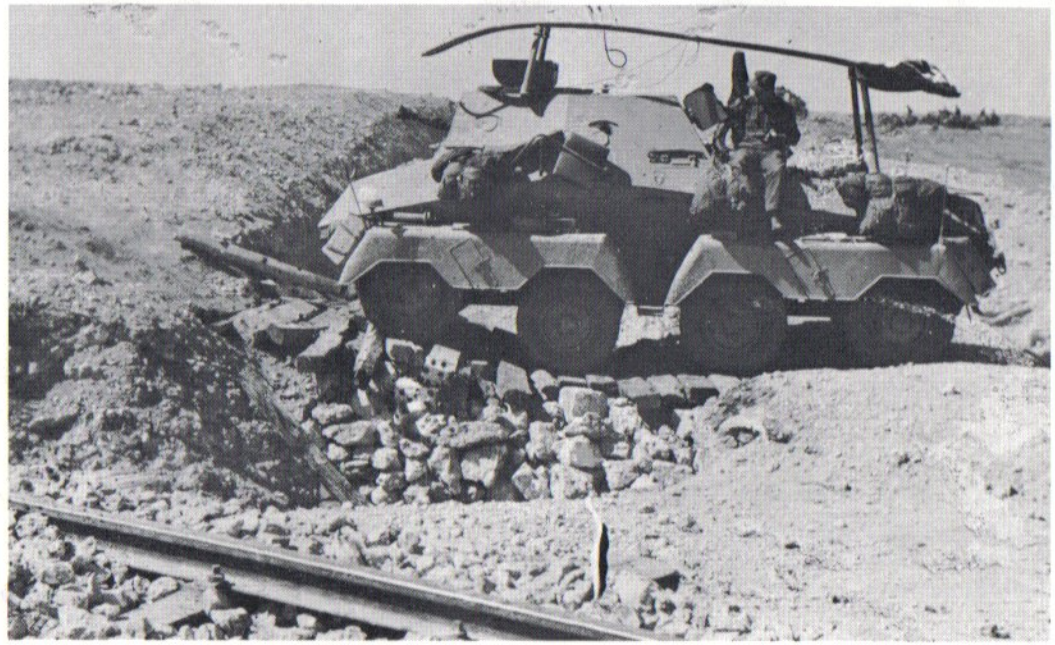
(Left) A pair of **Sd.Kfz. 263s** of **General Kleist's** armored corps crosses a bridge constructed by combat engineers. The bundle of logs each of the vehicles carries was most normally used to help the cars cross terrain that was either muddy or sandy, but at times also served as fuel for campfires and cooking.

(Right) This heavy communications vehicle has been located in a partially dug in position as one of its crew members stands radio watch. The sand and dirt has been heaped up around the sides of the vehicle to form a rampart that will protect the tires from being punctured by mortar and artillery shell fragments.



This heavy communications car slowly negotiates its way over a trench by using a 'bridge' built with stones and railroad ties taken from the railroad spur in the foreground.

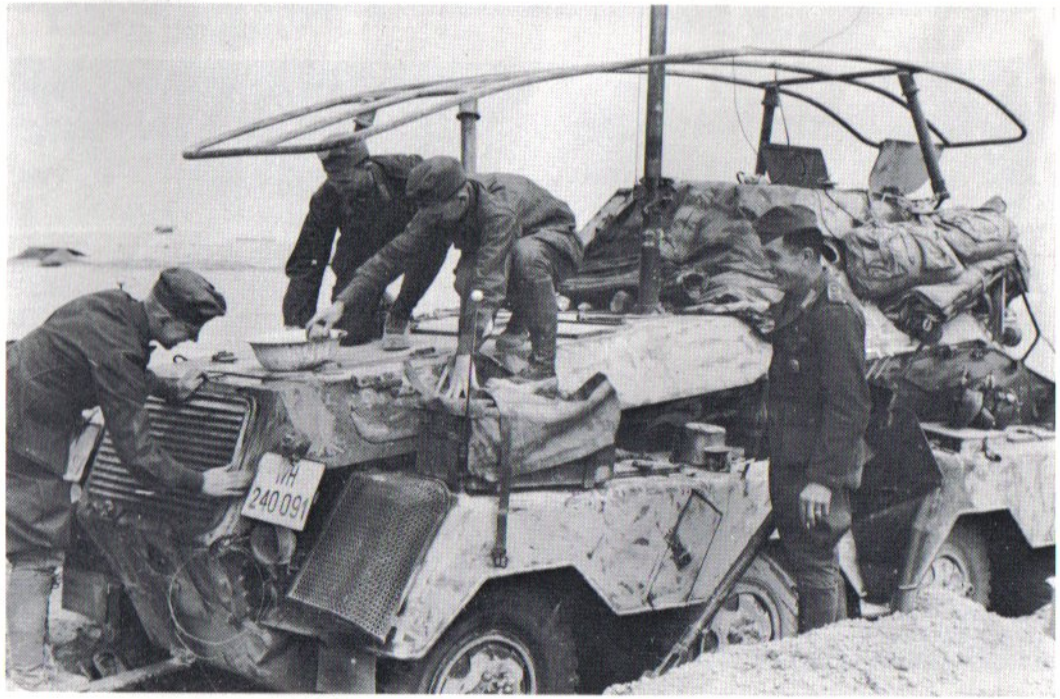
(Below) As the crew members hang on, this **Sd.Kfz. 263** raises a cloud of desert dust and sand as it speeds from a position in the rear of the **Afrika Korps** lines up to a point where the Germans had made a breakthrough over terrain held by an Indian infantry division.



A crew member spends his off-duty time catching up on the news from home by reading a three-week old copy of the Berlin evening newspaper, the **'Berliner Illustrierte'**.

Although it may first appear that the crew members of this communications vehicle are helping themselves to some precious water from the pan on the engine cover, they are actually engaged in a form of preventive maintenance on the vehicle.

Visible just beyond the communications vehicle is the tent-covered dugout prepared by the crew to provide them some shade from the hot desert sun. Although there was some shade inside the vehicle, the radio equipment kept the heat up to unbearable heights.

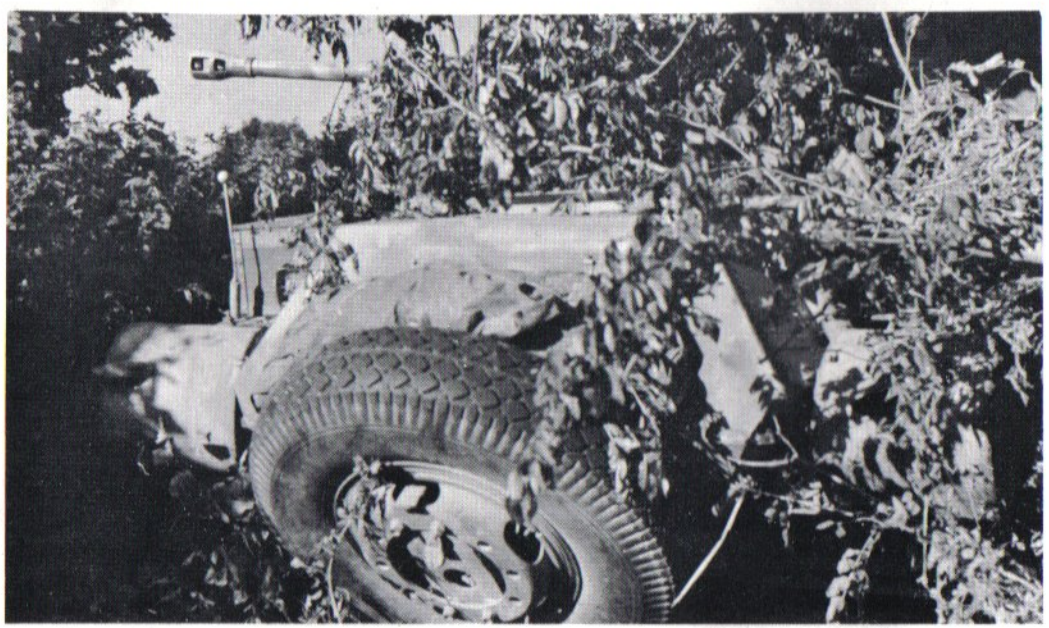


The members of the crew are swabbing down the rear decking of their vehicle with gasoline, concentrating on all areas around the intake grilles and the radiator in order to remove the sand and grit that has accumulated there over the past several days so that it will not be sucked inside the engine compartment and possibly foul the engine, once it is started up.

Schwerer Panzerspähwagen (5cm) 'Puma' (Sd.Kfz. 234/2)

A fine view of a late model **Sd.Kfz. 234/2 armored car** with its turreted 5 cm high velocity anti-tank gun. This photo was taken in Normandy during the Allied Invasion in June of 1944. The vehicle was abandoned after having sustained damage to the rear of the vehicle, the engine and a wheel from its second axle.

A crew member on radio watch peers out of the turret of this **Sd.Kfz. 234/2.** The barrel and muzzle brake of the 5 cm gun had to be kept clear of brush and leaves not only so that the gunner could get a good, clear shot at his target, but also because the additional brush on the gun tube might foul it if the turret were rotated toward a new target.



This shot shows the rear of a well camouflaged **Sd.Kfz. 234/2 heavy armored car** in position to await the approach of Allied troops through the bocage country. Note the stowage position of the spare wheel and tire on the rear end of the vehicle.

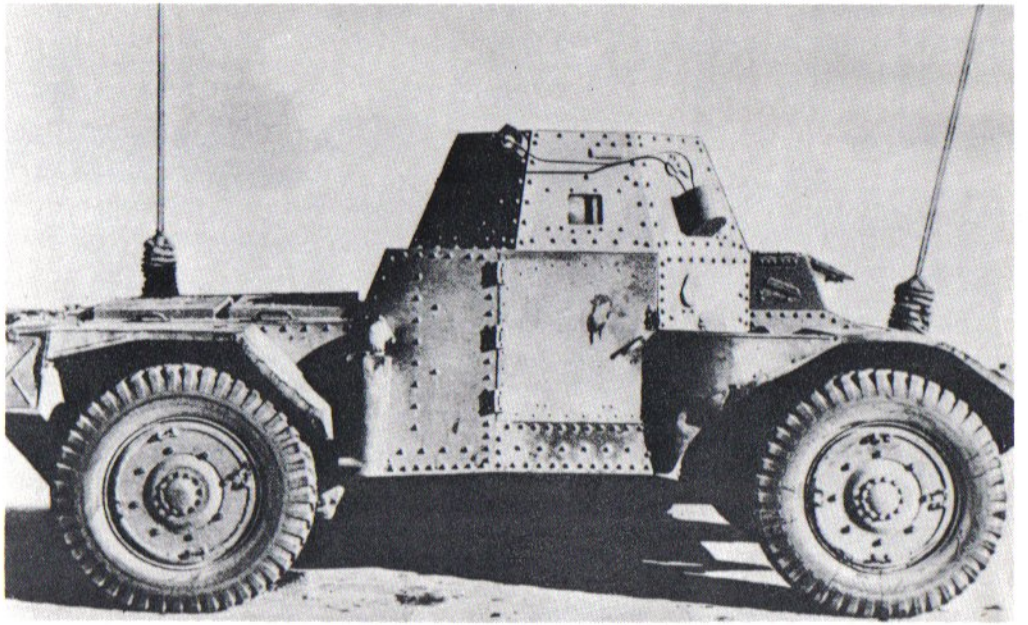
Foreign-Built Armored Cars

During the course of Germany's early victories, much foreign equipment fell into the hands of the German armed forces. Rather than scrap the enemy equipment and use the materials to build new equipment of German design (which would take some time), the German forces simply incorporated the captured equipment into their own units and used it to continue waging war.

Perhaps the greatest amounts of equipment came from the French and the Russians. In order to put more units into the field during the German summer offensive into the Soviet Union in 1941, Germany equipped many of them with captured French small arms, ammunition, artillery, tanks and armored cars.

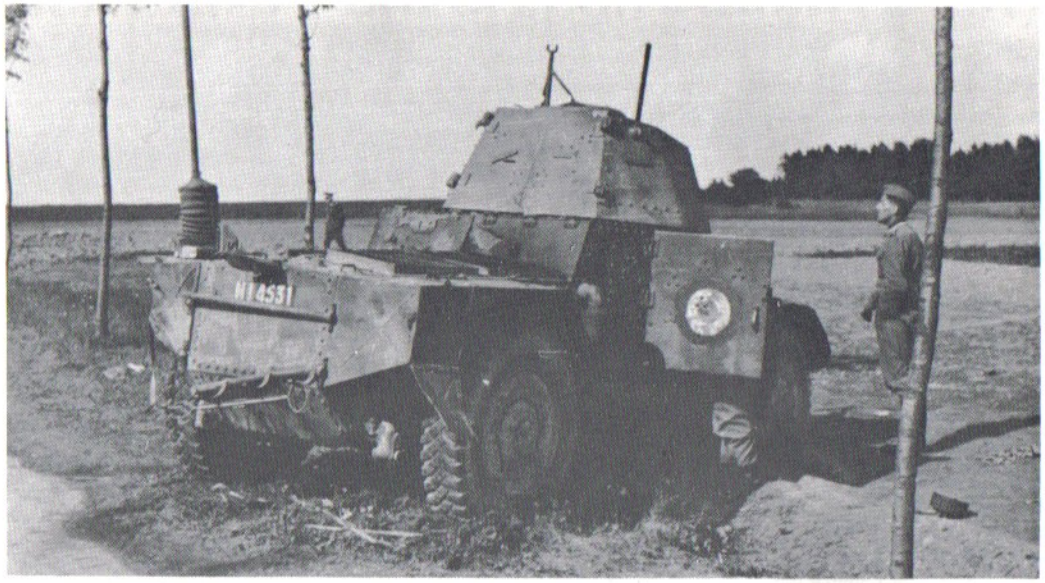
Austria and Czechoslovakia literally turned their entire armies over to the Germans when they were incorporated into the Third Reich. The first year of combat in the east brought the Germans masses of equipment; much of it going unused because it was considered inferior to that which the Germans used. The Soviet T-34 tank proved to be an exception, as did the Soviet 76.2mm anti-tank gun, which was used in large numbers by the **Wehrmacht**; many of them against the British in North Africa.

The British contributed a lot of equipment to the **Wehrmacht** when they abandoned it at Dunkirk in 1940. General Rommel used any kind of vehicle or weapon left to him because of the supply problems experienced by the **Afrika Korps**. The Americans proved to be a major contributor to the German war effort as they abandoned much equipment in the early fighting in Tunisia in 1942 and 1943.



(Above right) Because of the large numbers in which they were captured, the French **Panhard et Levassor 178** armored car was used heavily by the German **Wehrmacht** and **Waffen-SS**. The vehicle shown here is a new **Panhard et Levassor 178** command vehicle with the radio antennas mounted on the left side fenders. The armament has not yet been installed.

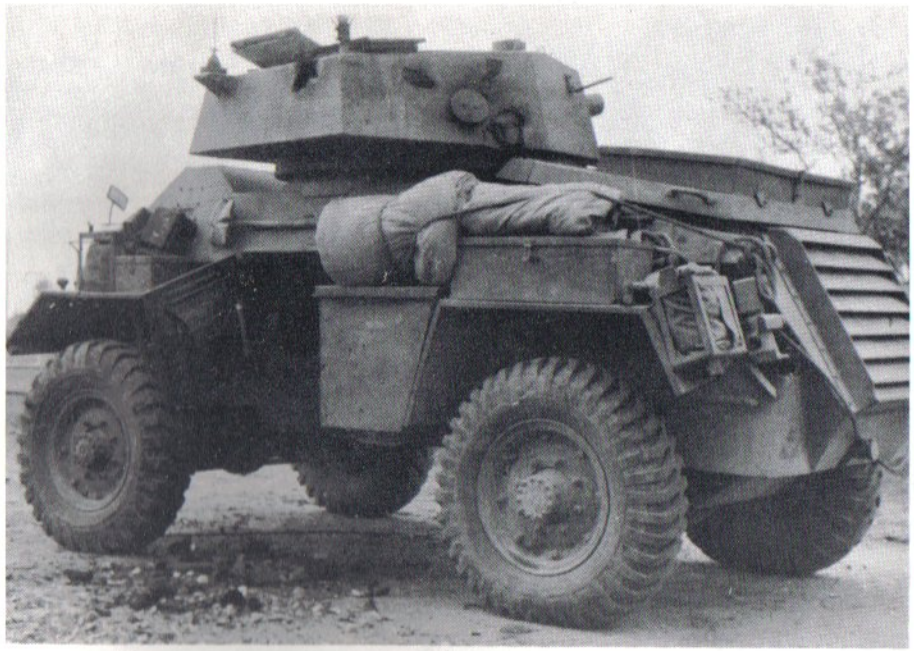
(Right) This **Panhard 178** (the standard vehicle without radios and antennae) has been abandoned by retreating French forces and is being tried out by **Wehrmacht** personnel. The vehicle proved to be quite maneuverable and reliable.



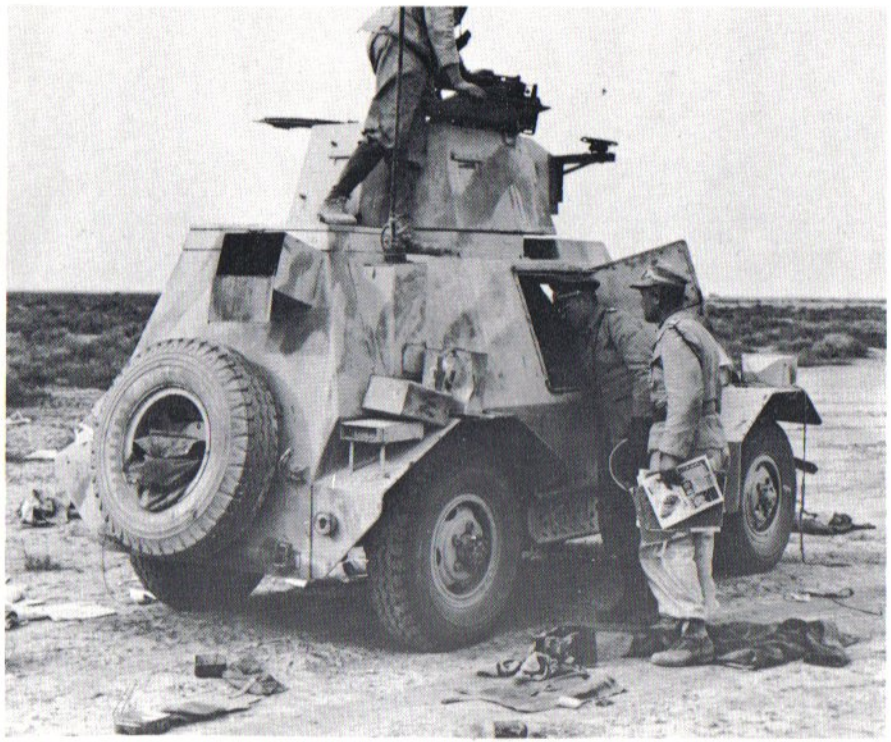
(Left) Some of the French vehicles that fell into German hands during the fighting in 1940 would never be used again. Note the hole in the rear plate of the superstructure below the turret where the 7.5 cm armor-piercing shell entered the vehicle, a **Panhard 178 command car.**

This **Panhard 178** is one of 43 of the type that were converted by the Germans into railway protection cars, having their road wheels removed and railroad wheels and axles put in their place. The large frame antenna on the top of the vehicle is another German modification that all of these vehicles had. The French-built 25 mm cannon was retained.

This small armored **Daimler scout car** was abandoned by the British at Dunkirk. The vehicle carried only an automatic weapon of rifle caliber; usually a Bren gun, as its main protective armament.



A **Humber Mk II British armored car** stands abandoned at a crossroad somewhere in the north of France. The shrapnel holes on the left front fender and large tool box, as well as the larger holes in the turret attest to the bravery of her crew and the ferocity of the German attack.



A German patrol inspects this abandoned **Marmon-Herrington Mk I armored car** on the African desert. The **Marmon-Herrington armored cars** were originally of American design, and were built in South Africa for the use of the Commonwealth forces there.

This **Marmon-Herrington Mk I** has been put to use by the **Afrika Korps.** The flag over the bowplate will protect her from low-flying **Luftwaffe** aircraft and can always be removed if British aircraft are spotted.

German troops closely inspect two Soviet **BA-10 6 x 4 armored cars** abandoned during the fighting in 1941. These vehicles were armed with a single rifle-caliber machine gun next to the driver and a 45mm anti-tank gun in the turret.

A German-manned **Autoblinda 41** passes a column of exhausted troops heading toward the rear. The vehicle's four-wheel drive and all-round steering made it extremely maneuverable over rough terrain.

(Right) A side view of the captured Soviet **BA-10 armored cars.** These vehicles were built on the standard **Ford 6 x 4 truck** chassis and featured removable tracks for the rear tires to aid in traction over bad terrain. The tracks are visible on the rear fenders of the vehicle in their stored position.

An Italian **Autoblinda 41 armored car** rolls into a Libyan village after heavy fighting as the pock-marks on the buildings to the right show.

'Nashorn' 'Hummel' 'Brummbär' in Action

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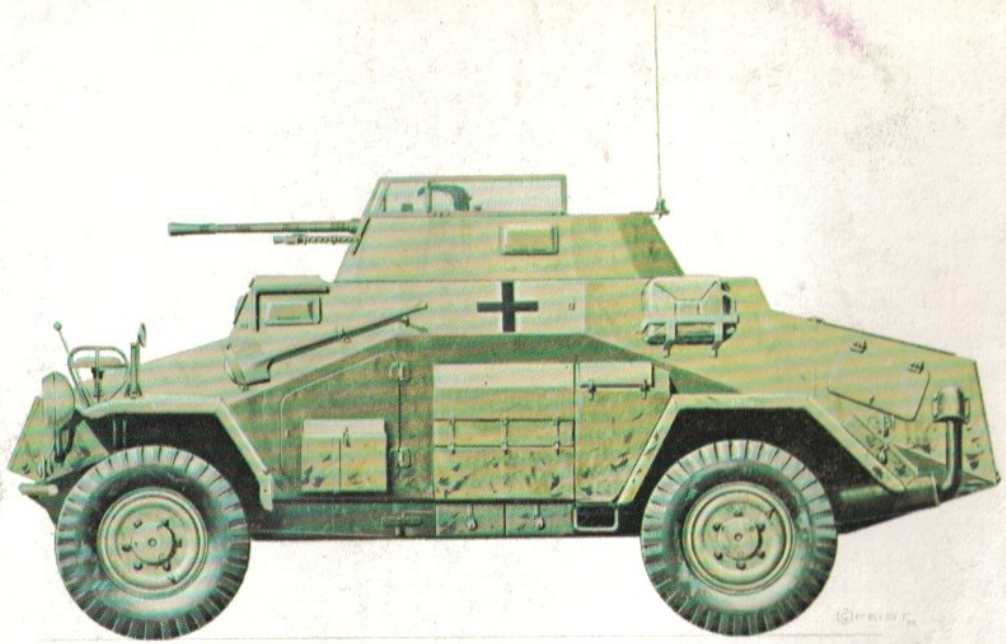
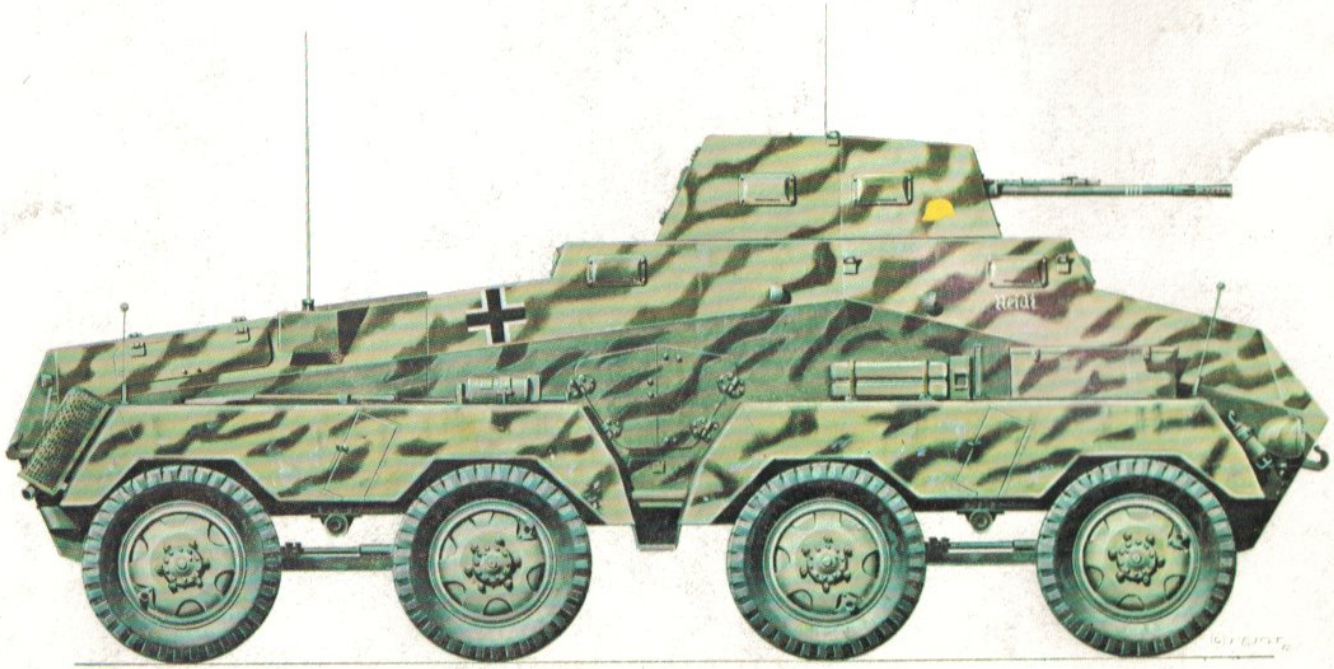


Leichter Panzerspähwagen (2 cm) (Sd.Kfz. 222)



Panzerspähwagen Sd.Kfz.232 with 2 cm KwK 38